



National Aeronautics and  
Space Administration  
**Lyndon B. Johnson Space Center**  
Houston, Texas



## Word of mouth

JSC designers take voice recognition one step closer to operational reality on STS-78. Story on Page 3.



## Celebrate heritage

JSC's American Heritage Week celebration of cultural diversity starts Monday. Story on Page 4.

# Space News Roundup

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## Safety panel to conduct shuttle program review

*White House initiates study in light of management changes, increasing flight rate*

NASA has asked the Aerospace Safety Advisory Panel to undertake a focused review of the Space Shuttle Program, concentrating on the safety of the shuttle in light of management changes, planned shuttle upgrades and flight rates to build and support the International Space Station.

The safety review is being conducted at the request of the White House. ASAP was created by the

Congress in 1967 following a command module fire on Apollo 204. The panel will submit its final report through NASA to the White House by the end of November.

"We welcome this review," said Steve Oswald, the Office of Space Flight's deputy associate administrator for shuttle. "Our number one priority in the shuttle program is to fly safely, and we welcome the ASAP's experienced and independent view-

point to make sure we stay focused on that goal."

In directing the NASA Administrator to conduct the review, the President's Science Adviser Dr. John H. Gibbons stated as its goal, "to ensure that our efforts to improve and streamline the Space Shuttle Program do not inadvertently create unacceptable risk."

The shuttle program has been at the forefront of the agency's efforts

to reshape its management and organizational structure. Changes in the shuttle program include plans to consolidate operations to a single prime contractor, downsize the shuttle workforce and reduce the cost of operations and management.

"We've accomplished these changes while successfully maintaining the safety and reliability of the system," Oswald said. "What we want the safety panel to do is exam-

ine all the things we have done, or plan to do, and make sure we are not overlooking anything that could adversely affect safety."

Oswald said NASA also will ask the safety panel to examine the planned shuttle flight rate, and conduct a technical audit of the performance improvements planned for the shuttle in preparation for constructing and supporting the International Space Station.

## Debris prime space tether break suspect

The tether connecting an experimental satellite to the payload bay of the Space Shuttle *Columbia* broke as a result of electrical arcing and burning of the tether, an investigative board reported Tuesday.

Arcing occurred because either foreign objects (but not orbital debris or micrometeoroids) penetrated the tether, or a defect in the tether caused a breach in the layer of insulation surrounding the tether conductor, the 358-page report stated. The insulation breach provided a path for the current to jump, or arc, from the copper wire in the tether to a nearby electrical ground.

The report on the February loss of the Tethered Satellite System during STS-75, released by NASA and the Italian Space Agency (ASI), went on to state that debris or broken wire in the deployer mechanisms and in the tether itself could have been pushed into the insulation layer while the tether was still wound on its reel. The investigation found evidence of damage to copper wire in the tether.

The arcing, which began in an intricate part of the Tethered Satellite System known as the lower tether control mechanism, sputtered intermittently for nine seconds as the moving tether passed through deployer mechanisms and then into the boom area of the tether system.

"This arcing produced significant burning of most of the tether material in the area of the arc," the board found. The tether was designed to carry up to 15,000 volts DC and handle tensile forces of up to 400

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JSC Photo by Benny Benavides

**JSC Director George Abbey, left, welcomes home the STS-77 crew at Ellington Field following a successful 10-day mission. Seated from left are Commander John Casper, Pilot Curt Brown and Mission Specialists Dan Bursch, Marc Garneau, Andy Thomas and Mario Runco.**

## Crew cites tremendous teamwork

The crew of STS-77 said what most crews say upon their return home—that the mission went very smoothly thanks to the hard work of people on the ground—and it was clear they meant it.

Arriving at Ellington Field last Wednesday afternoon, they were very specific in their praise of a "tremendous amount of teamwork."

Commander John Casper said that teamwork began with his crew—Pilot Curt Brown and Mission Specialists Dan Bursch, Marc Garneau, Andy Thomas and Mario Runco—but went on to laud the efforts of all the people who prepared them and carried them through the flight.

"The very best thing from my personal

standpoint was the tremendous amount of teamwork," he said. Then, one by one, he cited the Mission Control team, the training team "that put us through the drill," the rendezvous team "that planned this all out so that it almost made it look easy for us," and the flight activities team that "put together really two kind of different flights—microgravity science and technology demonstration—with a lot of rendezvous and deploys, things that really don't go together very well."

Brown, who concentrated on the flight's record four shuttle-satellite rendezvous, echoed the commander's comments about the rendezvous and flight schedulers.

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**ENDEAVOUR**



**COLUMBIA**

## Columbia crew completes final dress rehearsal

By James Hartsfield

*Columbia* launch preparations remained on target this week for a 17-day STS-78 flight, aiming toward a liftoff as early as 9:49 a.m. CDT June 20.

The STS-73 crew—Commander Tom Henricks, Pilot Kevin Kregel, Payload Commander Susan Helms, Mission Specialists Richard Linnehan and Charles Brady, and Payload Specialists French Astronaut Jean-Jaques Favier and Canadian Astronaut Robert Brent Thirs—traveled to KSC Monday for a dress rehearsal countdown. The rehearsal countdown was completed on Wednesday.

Shuttle managers were scheduled to meet Thursday for a final Flight Readiness Review of all mission preparations. For a June 20 launch, the countdown would begin June 17. *Columbia* will carry the Life and Microgravity Spacelab with experiments focusing on a variety of biological investigations.

Earlier this week, technicians completed a flight readiness test of *Columbia*'s three main engines, a check of all electrical connections and pneumatic operations. Also, a standard leak check of the main engine plumbing was performed.

Meanwhile, *Atlantis*, in KSC's Bay 1 shuttle processing hangar, is being readied for an early August launch on STS-79, the fourth Mir docking mission. Installation of the three main engines was completed over the weekend, and the orbiter docking system was tested early this week. Other work included installation of the Spacehab tunnel adapter in *Atlantis*' cargo bay.

*Endeavour* is in KSC's Bay 3 shuttle hangar being prepared for an eight-month period of modifications and structural inspections, following which, its next mission will be the first International Space Station assembly shuttle flight in late 1997.

At Palmdale, *Discovery* is nearing completion of its modification and maintenance period. *Discovery* is targeted to be rolled out of the Palmdale hangar June 25.

## Lucid passes halfway point; 'Yuris' make third space walk

Mir 21 Cosmonaut Researcher Shannon Lucid passed the halfway point in her mission aboard the Mir Space Station this week as she and her crewmates continued work with U.S. science experiments and made their third space walk in two weeks.

"Thanks a lot," Lucid said upon receiving congratulations from the NASA support team in Russia for reaching the midpoint. "Being halfway is quite a milestone."

Last Thursday night in Russia, Mir 21 Commander Yuri Onufrienko and Flight Engineer Yuri Usachev ventured outside the space station for a five-hour space walk to mount a German remote sensing camera on the exterior of the Priroda module. The

Modular Optoelectronic Multispectral Scanner, which flew on STS-7 and STS-41B, will be used to study the Earth's atmosphere and environment. Lucid sent commands from

inside Mir to power up the system. The two space walkers also installed a new Kvant-2 handrail that will make moving around the station during future space walks easier.

Lucid also continued configuring and testing the U.S. science equipment in the Priroda and Spektr modules. She performed the first two runs with the Queen's University Experiment in Liquid Diffusion-II payload. The furnace is used to study the diffusion characteristics of molten metals. An earlier version flew on STS-52 in 1992.



**LUCID**



JSC Photo by Robert Markowitz

**JSC employees gather at the site of the center's new memorial tree grove Thursday near Bldg. 111 on Fifth Street to dedicate the memorial to fallen astronauts. JSC Director George Abbey, Associate Director John Young and members of the deceased astronauts' families planted the trees. Astronaut Frank Culbertson played taps and pilots Scott Altman, Michael Bloomfield, Dominic Gorie and Susan Still performed a T-38 fly-over.**

## Trio rounds out STS-83 company

Jim Halsell will command the long-duration STS-83 Microgravity Science Laboratory mission set for launch on board *Columbia* in the spring of 1997.

The Air Force lieutenant colonel will be joined on the flight deck by pilot Susan Still, a Navy lieutenant and the first of the 1995 class of astronauts to be assigned to a shuttle flight, and Mission Specialist Mike Gernhardt, Ph.D.

The trio joins Payload Commander Janice Voss and Mission Specialist Don Thomas, previously named to the flight, along with Payload Specialists Roger Crouch and Gregory Binteris.

Halsell, 39, has flown twice on the shuttle as pilot on *Columbia*'s STS-65 mission in July 1994 and on *Atlantis* for STS-74, the second Shuttle-Mir docking mission. Still,

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